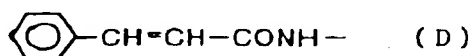
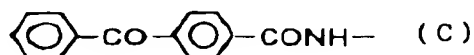
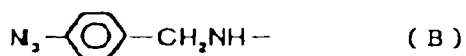
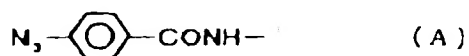


13. A functional chitosan derivative characterized by being formed by incorporating to an at least partially deacetylated chitin/chitosan at least two functional groups selected from:
- a carbohydrate having a reducing terminal being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan;
 - a photo-reactive functional group being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan;
 - an amphipathic group being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan or a hydroxyl group at the 3-position or 6-position of a glucosamine unit or acetylglucosamine unit constituting said chitin/chitosan; and
 - a glycosaminoglycan being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan.
14. A functional chitosan derivative as recited in claim 13, characterized in that the degree of deacetylation of the chitin/chitosan is at least 40%.
15. A functional chitosan derivative as recited in claim 13, characterized in that the carbohydrate having a reducing terminal is a carbohydrate having 20 or less constituent carbohydrate units.
16. A functional chitosan derivative as recited in claim 15, characterized in that the carbohydrate having a reducing terminal is a neutral disaccharide.
17. A functional chitosan derivative as recited in claim 13, characterized in that the degree of substitution of carbohydrates having a reducing terminal is 0.1-80%.

The photo-reactive functional group is chosen from among carbonylazide groups, sulfonylazide groups and aromatic azide groups.

the degree of substitution of the photo-reactive functional groups is 0.1-80%.

20. A functional chitosan derivative as recited in claim 13, characterized in that the amphipathic group is a non-ionic group.
21. A functional chitosan derivative as recited in claim 20, characterized in that the amphipathic group is a polyoxyalkylene alkyl ether group.
22. A functional chitosan derivative as recited in claim 13, characterized in that the degree of substitution of the amphipathic groups is 5-70%.
23. A functional chitosan derivative as recited in claim 13, characterized in that the glycosaminoglycan is a heparin derivative.
24. A functional chitosan derivative characterized by being formed by incorporating to an at least partially deacetylated chitin/chitosan at least one functional group selected from:
 - a carbohydrate having a reducing terminal selected from lactose, maltose, melibiose, cellobiose, laminaribiose and mannanose and equivalents thereof and being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan;
 - a photo-reactive functional group selected from the following (A)-(D) and equivalents thereof:



wherein C₆H₄ is a para-substituted phenyl group.

- an amphipathic group being incorporated to an amino group at the 2-position

the 3-position or 6-position of a glucosamine unit or an acetylglucosamine unit constituting said chitin/chitosan; and

- a glycosaminoglycan being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan.
25. A health-care material comprising a functional chitosan derivative as recited in any one of claims 13-24.
26. A medical material for wound dressings, anti-adhesion materials, hemostatics, sealants for body fluids or gases, clathrates for drug delivery or encapsulating agents for cells adhesive comprising a functional chitosan derivative characterized by being formed by incorporating to an at least partially deacetylated chitin/chitosan at least one functional groups selected from:
- a carbohydrate having a reducing terminal being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan;
 - a photo-reactive functional group being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan;
 - an amphipathic group being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan or a hydroxyl group at the 3-position or 6-position of a glucosamine unit or acetylglucosamine unit constituting said chitin/chitosan; and
 - a glycosaminoglycan being incorporated to an amino group at the 2-position of a glucosamine unit constituting said chitin/chitosan.

REMARKS

Appended Claims 1-12 have been cancelled and new claims 13-20 have been added.